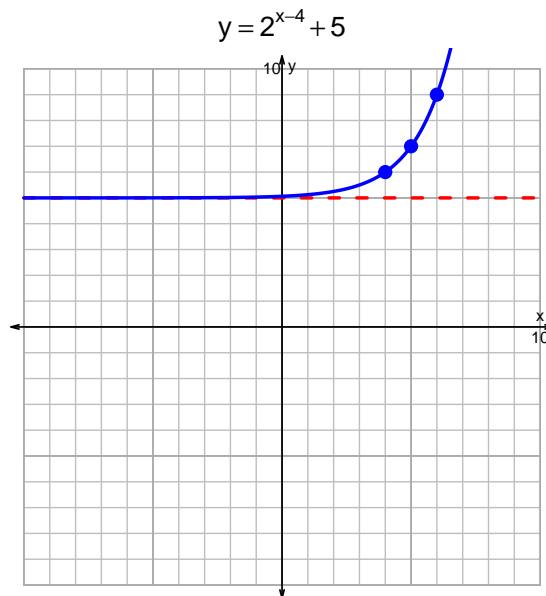
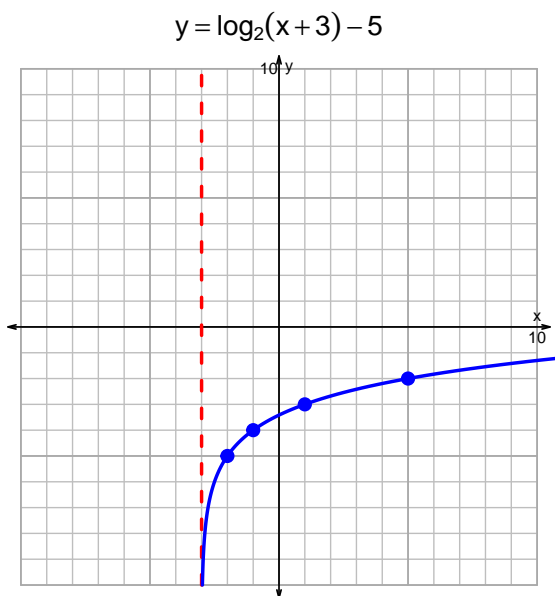


Name: \_\_\_\_\_

Date: \_\_\_\_\_

s18QUIZ: EXP LOG (SLTN v264)

1. Graph  $y = \log_2(x + 3) - 5$  and  $y = 2^{x-4} + 5$  on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$29 = \left(\frac{5}{3}\right) \cdot 10^{7t/4}$$

Divide both sides by  $\frac{5}{3}$ .

$$\frac{29 \cdot 3}{5} = 10^{7t/4}$$

Take log, base 10, of both sides.

$$\log_{10} \left( \frac{29 \cdot 3}{5} \right) = \frac{7t}{4}$$

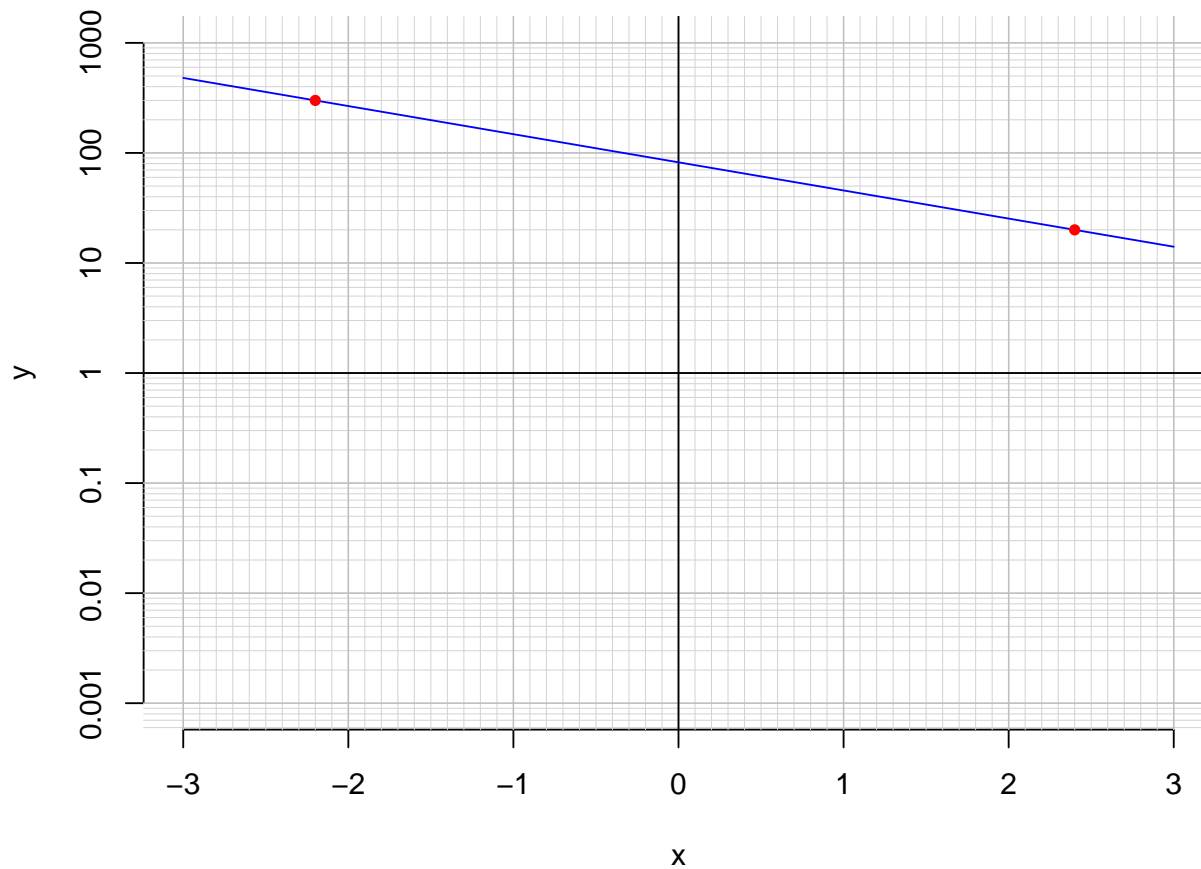
Divide both sides by  $\frac{7}{4}$ .

$$\frac{4}{7} \cdot \log_{10} \left( \frac{29 \cdot 3}{5} \right) = t$$

Switch sides.

$$t = \frac{4}{7} \cdot \log_{10} \left( \frac{29 \cdot 3}{5} \right)$$

3. An exponential function  $f(x) = 82.2 \cdot e^{-0.589x}$  is graphed below on a semi-log plot.



- a. Using the plot above, evaluate  $f(2.4)$ .

$$f(2.4) = 20$$

- b. Express  $f^{-1}(x)$ , the inverse of  $f$ .

$$f^{-1}(x) = \frac{-1}{0.589} \cdot \ln\left(\frac{x}{82.2}\right)$$

- c. Using the plot above, evaluate  $f^{-1}(300)$ .

$$f^{-1}(300) = -2.2$$